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NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

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ALBERT FREDERICK HILL
STUART KIMBALL HARRIS
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} Associate Editors

Vol. 56

December, 1954

No. 672

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The New England Botanical Club, Inc.

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AN UNDESCRIPTED DWARF SPECIES OF AMORPHA FROM GEORGIA

ROBERT L. WILBUR

IN the Spring of 1953 an *Amorpha* was collected in the Coastal Plain of southern Georgia which appears to be undescribed. Many of its characteristic features are not matched by any of the species described in either the treatment by Rydberg (1919) or Palmer (1931). The plant was found in abundance in a sandy savannah near Lumber City, Georgia. This previously undescribed species of *Amorpha* is at present known only from the type-locality. No specimen of it was to be found in the herbarium of the University of Georgia or that of the University of Florida.

***Amorpha georgiana* sp. nov.** Frutex erectus paululus caespitosus 3–6 dm. altus. Folia numerosa (3) 6–9 (12) cm. longa, subsessilia. Petiolus 1–3 mm. longus. Foliola numerosa, densa, 23–47, plerumque plus quam 40, (3) 6–9 (11) mm. longa (2) 3–4 (5) mm. lata, plerumque elliptica ad oblonga, apice rotundo, truncato vel emarginato, mucronato; mucrone gracile, fastigato, 0.3–0.5 mm. longo; margine revoluto et parce ciliato. Foliola supra glabra, infra parce ciliata et pellucido-punctata, glandes punctatae uniformes, minus quam 70. Racemi 1–4, (2) 3–5 (6) cm. longi; florae numerosae, compactae, pedicelli c. 1 mm. longi. Tubus calycis turbinatus, 1.7–2 mm. altus, glaber, glandulos-punctatus supra. Lobi calycis superiores triangulo-dentati, acuti, c. 1 mm. longi; lobi inferiores lanceolati, acuminati, c. 1.2 mm. longi; lobi punctato-glandulosi et glabri sed marginibus dense ciliatis. Vexillum late obovatum, 3.5–5 mm. longum, c. 3.5 mm. latum, rubicundo-purpureum. Filamenta exserta, glabra; stylus antrorso-pubescent; stigma capitatum, penicillatum. Fructus (maturus?) 3.5–4.5 mm. longus, c. 2 mm. latus, glaber, manifeste glandulos-punctatus, obliquo-obovatus, dorsus rectus.

A low, erect, somewhat caespitose shrub 3–6 dm. high with the several to numerous olivaceous branches of the current season's growth 1–2.5

dm. long and 1–2 mm. in diameter, much angled and grooved, glabrescent or minutely puberulent, strongly ascending from the gray to black, slender (about 2–3 mm. in diameter) growth of the preceding season. Leaves numerous, ascendent, arching upward (3) 6–9 (12) cm. long, nearly sessile. Petioles sparsely short-pubescent, shorter than the breadth of the nearest leaflet, about 1–3 mm. long. Stipules inconspicuous, caducous, glabrous, linear-subulate, 1.5–2.5 mm. long. Rachis slender, puberulent, strikingly channeled above, about 0.5 mm. in diameter. Leaflets numerous, usually more than 40 per leaf but varying from 23–47, (3) 6–9 (11) mm. long, (2) 3–4 (5) mm. wide, ratio of length to width about (1) 1.3–2 (2.2), approximate, often imbricately overlapping, the interval between petiolules about (2) 3–5 (6) mm., mostly elliptical to oblong but varying from narrowly elliptical to rarely almost orbicular, rounded to somewhat truncate at base, rounded or truncate and often slightly emarginate at apex with a slender, tapering mucro about 0.3–0.5 mm. long; texture when dry coriaceous, finely reticulate above from the slightly elevated venation but the midvein depressed, the margin somewhat revolute, entire to finely crenulate, the midvein prominently elevated on the lower surface, the secondary veins slightly raised below; glabrous above except for the slightly ciliate margin; while immature, pubescent beneath, the pubescence principally restricted to the midvein and its branches, becoming glabrescent; the punctate glands on the lower surface inconspicuous but noticeable to the unaided eye, more or less of uniform size, averaging less than 70 per leaflet and fewer than 15 per medial 3 mm. half-section. Petiolule puberulent, short, about 0.7–1 mm. long; upper stipel about 1 mm. long, linear-subulate, often persistent, the lower stipel reduced to a glandular, minute, rounded swelling. Racemes solitary or few to several (about 2–4) closely associated, short, (2) 3–5 (6) cm. long, almost sessile with a short peduncle up to 8 mm. long; the puberulent rachis strongly ridged and sharply angled; the flowers densely clustered and borne on short, slightly puberulent to glabrescent pedicels about 1 mm. long subtended by linear-subulate, about 1.5–2 mm. long, ciliate, quickly caducous bracts which leave noticeable scars near base of pedicels. Calyx-tube turbinate, about 1.7–2 mm. high, slightly higher on the abaxial side, glabrous, the punctate glands mostly restricted to the upper half of the tube and arranged more or less in two rows. The two adaxial (= ventral or upper) calyx-lobes triangular-dentate, acute, about 1 mm. long; the three abaxial (= dorsal or lower) calyx-lobes lanceolate, acuminate, somewhat longer than the adaxial lobes, about 1.2 mm. long with the lowermost lobe slightly longer than the two lateral lobes; all lobes punctate-glandular and glabrous except for the densely ciliate margins. Vexillum about 3.5–5 mm. long, about 3.5 mm. wide, very broadly obovate, tapering abruptly to a narrow claw, strongly arching and incurved, enveloping the internal floral parts, the margin slightly irregular to somewhat finely erose, reddish-purple. Androecium monadelphous, about 6 mm. high; the filaments purple, glabrous, filaments united at base for about 1 mm.; anthers about 0.4–0.5 mm. long, exserted,

yellow. Pistil about 6 mm. long; the ovary about 1 mm. high, glabrous, obovoid, containing two ovules, the style about 5 mm. long, purple, densely antrorsely pubescent; the stigma terminal, capitate, penicillate. Fruit (fully grown?) 3.5–4.5 mm. long, about 2 mm. wide, appearing slightly stipitate, glabrous, bearing conspicuously punctate resinous glands, slightly exceeding the calyx in length, strongly flattened, obliquely obovate, the adaxial side straight or nearly so, the abaxial side strongly bowed, terminated by the strongly recurved persistent style, and apparently with only one seed.

TYPE:—Sandy wire-grass savannah about 3 miles northwest of Lumber City, Telfair County, Georgia. May 9, 1953. *R. L. Wilbur* no. 3158. (GH). Isotypes: (GA, MICH, MO, NCS, NY, US.). Known only from the type-locality. An additional collection (*Wilbur* no. 3448) was made May 24, 1953 at which time fruiting material was available.

Growing in close association with *Amorpha georgiana* were two rarely collected and narrowly restricted endemics, *Penstemon dissectus* Ell. and *Marshallia ramosa* Beadle & Boynton. *Penstemon dissectus*, according to both Harper (1906) and Pennell (1935), is found only on outcrops of the Altamaha Grit, believed to be of Pliocene age. *Marshallia ramosa* is geographically limited to this same formation. It is quite possible that *A. georgiana* is similarly restricted. Harper, who made an intensive study of the flora of the Altamaha Grit, reports only two species of *Amorpha* from the region, *A. fruticosa* L. and *A. herbacea* Walt.

The very low stature of *A. georgiana* distinguishes it at once from the more robust species of the southeastern Coastal Plain, e.g. *A. nitens* Boynton, *A. crenulata* Rydb., *A. curtissii* Rydb., *A. virgata* Small, *A. croceolanata* Wats., or *A. fruticosa* L. Other striking features by which the new dwarf species may be distinguished from the more robust species are the length of the petiole, size of the leaflets and the number of leaflets per leaf. *Amorpha georgiana* is characterized by a petiole less than 5 mm. long, by leaflets typically less than 1 cm. long, and usually more than forty leaflets per leaf. All of the more robust species mentioned above typically possess petioles 1 cm. or more in length, leaflets longer than 1 cm. and seldom more than twenty-five leaflets per leaf, and very rarely more than thirty-five.

The affinities of *A. georgiana* then appear to be with the southeastern dwarf species, *A. herbacea* Walt., *A. cyanostachya* M. A. Curtiss and particularly with *A. floridana* Rydb. In



FIGURES 1-6. *AMORPHA GEORGIANA*. Fig. 1. Habit sketch $\times \frac{1}{2}$; Fig. 2. Leaflet $\times 5$; Figs. 3 & 4. Vexillum $\times 5$; Fig. 5. Flower $\times 5$; Fig. 6. Calyx and young fruit $\times 5$.

addition to a similar dwarf habit these species all typically possess petioles 1 cm. or less in length. These characters serve to separate the dwarf species as a group from the aforementioned robust species centering about *A. fruticosa*. The following

key to the southeastern dwarf species of *Amorpha* is offered in hope that it will prove to be an aid in identification.

KEY TO THE SOUTHEASTERN DWARF SPECIES OF AMORPHA

1. Leaves and branches densely canescent throughout, calyx-tube densely pubescent, fruit pubescent..... *A. herbacea* Walt.
1. Leaves and branches glabrous or nearly so or but moderately pubescent and then usually glabrescent, calyx-tube glabrous or bearing but few scattered hairs, fruit glabrous.
 2. Leaflets 15–25 in number, medial and lower petioles 8 mm. or more in length..... *A. cyanostachya* M. A. Curtiss.
 2. Leaflets 21–47 in number, usually 35 or more per leaf, medial and lower petioles less than 8 mm. long.
 3. Midvein scarcely if at all extending beyond the blade, terminating in a swollen almost globose tip; leaflets usually more than 1 cm. long; punctate glands of the lower surface of the blade numerous, more than 90 per leaflet, or about 15 or more per 3 mm. medial half-section, appearing to be of 2 sizes; racemes several to numerous, elongate, 10–20 cm. long; calyx-lobes pubescent on the surface in addition to the densely ciliate margins..... *A. floridana* Rydb.
 3. Midvein extending beyond the blade as a tapering slender mucro 0.3–0.5 mm. long; leaflets mostly less than 1 cm. long; punctate glands relatively few, less than 70 per leaflet, or less than 15 per 3 mm. medial half-section, more or less uniform in size; racemes few, short, less than 7 cm. long; calyx-lobes glabrous except for the densely ciliate margins..... *A. georgiana*.

I am indebted to Miss Lillian Arnold of the University of Florida, Dr. David D. Keck of the New York Botanical Garden, Dr. A. C. Smith of the Smithsonian Institution and Dr. C. Earle Smith, Jr. of the Philadelphia Academy of Science for the loan of specimens needed in this study. I should also like to express my appreciation to Mr. Howard Rock for the preparation of the accompanying figures.—DEPARTMENT OF BOTANY, NORTH CAROLINA STATE COLLEGE, RALEIGH, N. C.

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CLADONIA SUBRANGIFORMIS IN NORTH AMERICA¹

ALEXANDER W. EVANS

AMONG the *Cladoniae* belonging to the subsection *Chasmariae*, *C. furcata* (Huds.) Schrad., *C. subrangiformis* Sandst., and *C. rangiformis* Hoffm. constitute a group of closely related species. The primary squamules in this group are well developed but short-lived. Many of the specimens, in consequence, are composed entirely of podetia which die at the base and continue growing at the apex until their growth is terminated by the appearance of apothecia or by some other cause. The podetia, which are cupless and terete, branch repeatedly by dichotomies or whorls and form complex branch-systems, comparable with those of the *Unciales*. Both closed and open axils are present in most cases, and podetal squamules may be lacking altogether or more or less abundantly produced. The podetal wall is bounded on the outside by a well-developed cortex and on the inside by a continuous layer of cartilaginous tissue surrounding the central canal. In many cases numerous podetia are associated in extensive colonies.

Of the three species under consideration *C. furcata* is by far the commonest and has an almost cosmopolitan distribution. Vainio (1887, p. 361) assigns a similar distribution to *C. rangiformis* and cites stations for the species from all the continents including Australia. In North America, however, *C. rangiformis* is apparently much rarer than the published records imply, and the writer has seen no specimens that agree fully with authentic European material. The range of *C. subrangiformis* is incompletely known. All three species exhibit a wide range of variation in size, in color, in the extent of the branching, and in the characters derived from the podetal surface. This is particularly true of *C. furcata* under which a number of varieties and forms are now recognized. The forms of *C. subrangiformis* and *C. rangiformis* parallel those of *C. furcata* to a certain extent, and it is difficult in some cases to assign specimens definitely to the species of the group on the basis of morphological characters alone.

In the following account of *C. subrangiformis* a list of the

¹ Contribution from the Osborn Botanical Laboratory.

North American specimens in the Yale Herbarium is given, and the characters which have been assigned to the species are discussed.

CLADONIA SUBRANGIFORMIS Sandst. Abhandl. Naturw. Ver. Bremen **25**: 165. 1922. *Cenomyce furcata* δ . *hamata* Del. in Duby, Bot. Gall. 622. 1830. *Cladonia furcata* var. *palamaea* f. *hamata* Oliv. Expos. Lich. Ouest France **1**: 69. 1897. *C. furcata* var. *palamaea* f. *spectabilis* Zahlbr. Oesterr. Bot. Zeitschr. **57**: 26. 1907. [*C. furcata*] **C. subrangiformis* Des Abbayes, Bull. Soc. Sci. Bretagne **14**: 154. 1937.

On dry soil, preferably calcareous but not uniformly so. Widely distributed in Central Europe and recently reported from Venezuela (Sandstede, 1938, p. 86). New to North America.

MASSACHUSETTS, BARNSTABLE COUNTY: Brewster, Evans, 1929; South Chatham, Torrey, 1930; Eastham, Evans, 1935. MARTHA'S VINEYARD: between Oyster and Job's Neck Ponds, Torrey, 1936; east of Oyster Bay, Torrey, 1936. NANTUCKET: Gibb's Point, Torrey, 1937; Siasconset Road, Torrey, 1936; without definite stations, Sheldon, 1940; Eel Point region, Great Point, and Sesachacha, Sheldon, 1940.

CONNECTICUT, LITCHFIELD COUNTY: Washington, Evans, 1922 (listed, Trans. Connecticut Acad. **30**: 423. 1930, as *C. furcata* var. *subclausa*); New Milford, Evans, 1928 (listed, Ibid. 420, as *C. furcata*).

NEW YORK, LONG ISLAND: Manorville, Latham, 1937; Sag Harbor, Latham, 1946; East Hampton, Latham, 1947.

MEXICO: without definite station, E. Palmer, 1878.

JAMAICA: Cinchona and vicinity, Johnson, 1903 (University of Michigan Herbarium); Seifriz, 1919; Maxon and Killip, 1920 (listed, The Bryologist **50**: 42. 1947, as *C. cubana*); below Newhaven Gap, Maxon and Killip, 1920; between Castleton and Hardware Gap, Evans, 1937, 1938.

When Sandstede proposed *C. subrangiformis* as a new species in 1922 he used the phrase "n. spec.", thus implying that he was the author of the name; and in Nos. 784 and 882 of his *Cladoniae Exsiccatae*, distributed in the same year, the labels are inscribed "*Cl. subrangiformis* Sandst." In Nos. 1159 and 1182, however, distributed in 1923, and in No. 1842, distributed in 1929, the labels are inscribed "*Cl. subrangiformis* Scriba." In 1931 (p. 231) Sandstede gave, as the reason for this change, the fact that Scriba was the first to recognize the species. In the opinion of the writer this reason is inadequate, and Sandstede's name should be restored as the author of the species.

In his original description of *C. subrangiformis* Sandstede emphasized the presence of conspicuous white spots on the older parts of the podetial surface, and such spots are clearly shown in the figure published by Anders in 1928 (pl. 9, fig. 11) and in the

later figure published by Sandstede himself in 1931 (pl. 15, fig. 6). They represent masses of interwoven hyphae derived from the outer medullary layer of the podetial wall. Through the action of some stimulus the hyphal cells in localized areas are incited to grow and divide, and the masses of such hyphae as they increase in size rupture the cortex and thus become exposed to the air. The algal cells among the hyphae soon lose their green contents and are distinguished only with difficulty.

According to Bachmann's observations, which Sandstede cites in detail, the spots contain no soredia, and their development is not caused by the presence of a parasitic fungus. It is suggested that they may represent a response to unfavorable climatic conditions, such as those associated with very dry habitats. It is pointed out also that similar white spots may develop in *C. rangiformis* var. *muricata* (Del.) Arn., when growing with *C. subrangiformis*, and Asahina has since detected such spots in *C. furcata* (1942, p. 669). In all probability the spots are pathological in character, as Anders intimates (1928, p. 76), since their development is restricted to special habitats; and Asahina states definitely that they are abnormal and that they are associated with the deposition of calcium oxalate in the outer medulla. In any case little or no taxonomic significance can be assigned to the spots, in spite of their conspicuous appearance, and other characters will have to be used in distinguishing *C. subrangiformis* from its allies.

Among the other features of the species to which Sandstede called attention in his original description are the bitter taste, the definite and persistent yellow color induced by treatment with K,² and the following morphological characteristics of the podetia: the robustness, the presence of numerous lateral outgrowths, the sharp apices of the sterile ultimate branchlets, the scanty development of podetial squamules, and the wrinkled and rimose surface of the basal portion. In *C. furcata*, which is likewise bitter to the taste, treatment with K produces a dull yellow color which quickly deepens to a dingy reddish brown. Of course the K+ yellow reaction indicates the presence of atronorine and the bitter taste the presence of fumarproto-

² The letter "K" is an abbreviation for an aqueous solution of potassium hydroxide, and the letter "P" for an alcoholic solution of paraphenylenediamine.

cetraric acid. The P+ red reaction now supplements the bitter taste in the demonstration of the latter substance.

In 1937 Des Abbayes discussed the characters of *C. subrangiformis* and emphasized its relationship, not only to *C. furcata*, but also to *C. rangiformis*. Typical specimens of *C. subrangiformis*, according to his conception, are definitely P+ yellow and have robust podetia with white spots in the basal portion. The podetia develop also a variable number of lateral outgrowths in the form of spines and are colored more or less brown by exposure to the sun.

Between such specimens and specimens of *C. furcata* he distinguished a number of intergrading forms from France, based partly on morphological features and partly on chemical. These intergrading forms include specimens with the following types of podetia: slender podetia without white spots, which agree morphologically with *C. furcata* var. *palamaea* (Ach.) Vainio f. *implexa* (Floerke) Aigret but which are K+ yellow; slender podetia with white spots, which agree morphologically with *C. furcata* var. *palamaea* f. *spadicea* (Pers.) Aigret but which are likewise K+ yellow; robust podetia without white spots, which agree morphologically with *C. furcata* var. *palamaea* f. *recurva* (Floerke) Des Abbayes but which (as in the preceding cases) are K+ yellow; and podetia, which agree morphologically with *C. subrangiformis* but which are not definitely K+ yellow, showing instead the color-changes induced in *C. furcata* by this reagent or some color-change intermediate between these two extremes. Assuming the presence of both fumarprotocetraric acid and atronorine in *C. furcata*, as well as in *C. subrangiformis*, Des Abbayes attributed the different color-reactions induced by K to differences in the relative amounts of these two lichen-substances in the specimens tested.

From the data which have just been summarized Des Abbayes concluded that *C. subrangiformis* did not constitute a distinct species but that it represented a well-marked variety of *C. furcata*. At the same time he assigned to it an ecological significance, since he associated it with a special habitat, and on this basis maintained the name *C. subrangiformis*, preceding it with an asterisk to indicate its subordinate character.

Des Abbayes distinguished also intergrading forms connecting

C. subrangiformis with *C. rangiformis*. The latter species is definitely K+ yellow, indicating the presence of atronorine, and most specimens are P-, indicating the absence of fumarprotocetraric acid. Occasional specimens are met with, however, which are P+, although this reaction may be restricted to the podetial squamules; and specimens of this sort, in which traces at least of fumarprotocetraric acid are present, were interpreted by Des Abbayes as intergrades.

In 1942 Asahina published the results of his microchemical studies on various *Chasmariae*, including *C. furcata*, *C. subrangiformis*, and *C. rangiformis*. His studies of these three species were based on European material distributed by Sandstede in his *Cladoniae Exsiccatae*, supplemented in the case of *C. furcata* by Japanese and North American material. This material included 62 specimens from Europe, an indefinite number from Japan, and 46 from North America, and he found that atronorine was lacking in all, with the exception of four from Europe and one from North America. Although Zopf in 1908 had reported the presence of atronorine in *C. furcata*, Asahina concluded from his results that fumarprotocetraric acid was the only lichen-substance characteristic of the species and that the material examined by Zopf must have been mixed. He concluded further that specimens containing atronorine, which had been referred to *C. furcata*, must either be excluded from the species altogether or interpreted as transitional forms between *C. furcata* and *C. subrangiformis*.

His material of *C. subrangiformis* consisted of the five specimens in Sandstede's *Exsiccatae*. He demonstrated both atronorine and fumarprotocetraric acid in four of these but found the latter substance only in No. 1182. He therefore suggested that this specimen, in spite of its conspicuous white spots, might be interpreted as a form of *C. furcata* paralleling *C. subrangiformis*.

In the case of *C. rangiformis* Asahina found that 25 of Sandstede's numbers were P- but that 4 were P+, thus confirming the statements made by Des Abbayes. He found further that all these specimens, whether P- or P+, contained both atronorine and rangiformic acid, although the amount of the latter substance might be too small to be demonstrated readily by microchemical methods.

The writer, as late as 1950 (p. 92), expressed the opinion that atronorine represented a rare accessory component of *C. furcata* and called attention to a number of specimens so-named from southern New England in which this substance had been demonstrated. If, however, Asahina's conclusions are accepted, these specimens should no longer be retained under *C. furcata*, and it seems justifiable to transfer them directly to *C. subrangiformis*, under which they are listed in the present report. The same course should probably be pursued with the K+ yellow specimens which Des Abbayes interpreted as intergrades between *C. furcata* and *C. subrangiformis* and with some at least of his specimens in which the K+ yellow reaction was obscured by the large amount of fumarprotocetraric acid present. Des Abbayes himself, in fact, distributed one of his K+ yellow intergrades, represented by No. 48 of his Lichenes Gallici, under the name *C. subrangiformis*. The "intergrades" between *C. rangiformis* and *C. subrangiformis*, which Des Abbayes distinguished, have not been reported from North America and are hardly to be expected, since the occurrence of *C. rangiformis* itself on this side of the Atlantic is somewhat problematical.

The recognition of atronorine as a characteristic lichen-substance of *C. subrangiformis*, but not of *C. furcata*, makes it practicable to separate the species from each other without difficulty, since atronorine is readily demonstrated by means of Asahina's G.A.o-T. solution. It must be admitted, however, that the known forms of *C. subrangiformis* parallel forms of *C. furcata*. The K+ yellow intergrades of Des Abbayes, for example, have the morphological features of *C. furcata* var. *palmacea*, and some of the specimens from Massachusetts have the morphological features of *C. furcata* var. *racemosa* (Hoffm.) Floerke. As a matter of fact no constant morphological distinctions between the two species have as yet been pointed out. The relation of *C. subrangiformis* to *C. furcata*, therefore, is similar to that of *C. ecmocyna* (Ach.) Nyl. to *C. gracilis* (L.) Willd. (see Evans, 1952).

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THE OCCURRENCE OF RUBUS CHAMAEMORUS IN MINNESOTA.—From the Quetico-Superior Wilderness area is herewith recorded the addition of *Rubus Chamaemorus* L. to the flora of Minnesota. Its discovery was not surprising to the veteran botanists of the state. It came as a fulfillment of expectations consistent with previously known boreal elements in the flora of the area.

The plant was discovered by Mr. Clifford Ahlgren, Research Director of the Quetico-Superior Wilderness Research Center at Basswood Lake. His collection came to my attention, July 10th, last, while identifying and checking herbarium materials at the Research Center Herbarium. His collection, No. 3000 was made on June 13, 1954 from a bog forest along the Back Bay of Basswood Lake, when the plants were in full flower. On July 30, I was privileged to accompany Mr. and Mrs. Ahlgren on their return to the bog for additional collections.

The particular area of the bog including the *Rubus* colony is in sect. 17, Twp. 64, R. 10 at 48° 7' N. lat. and 92° 43' W. long. in Lake County. The swampy shoreline about one mile in extent with a dense growth of alder and dwarf birch passes abruptly into a sphagnum bog with a mature black spruce forest. The forest, about one-fourth mile wide and flanked by a high ridge, is moderately dense and moist, with a deep sphagnum ground-cover and



Above: habitat of *Rubus Chamaemorus*; below: a single plant.

unstable depressions. According to Mr. Ahlgren and his associates, in a nearby bog along the same shore-line, the peat, underlaid with blue clay, is $14\frac{1}{2}$ ft. thick.

Within an area of about one-quarter section of the bog, *Rubus Chamaemorus* occurs in scattered but vigorously growing colonies, in association with *Carex trisperma* and *Smilacina trifolia*. In spots with favorable illumination, as seen in plate 1204, its growth is dense and luxuriant with fruiting plants. Collection number *Lakela 18043*, with Clifford and Isabel Ahlgren on July 30, 1954 was made from fruiting colonies. The specimens compare well with those of higher latitudes from Mackenzie District, Quebec and northern Europe. In the field the leaves appear deeply lobed with a maximum width up to 14 cm.

To one who has known *R. Chamaemorus* in other regions, the collecting of Minnesota specimens and the sampling of its fruit is a gratifying experience especially when mingled with an appreciation of the wonders of plant growth and distribution. I recall enjoying the luscious golden fruit on mountain slopes of the Arctic Ocean at 69.5° N. lat. near Liinahamari, then a part of Finland, where I collected No. 3312, Aug. 17, 1939. Although the fruits of the Minnesota plants are smaller than those from the arctic latitudes, the characteristic flavor is the same.

This find of *R. Chamaemorus* in Minnesota, a species with circumpolar distribution in arctic realms, is the first known record from the center of the continent.—OLGA LAKELA, UNIVERSITY OF MINNESOTA, DULUTH BRANCH.

ERAGROSTIS CURVULA IN MISSOURI.—In July, 1952, scattered but dense clumps of what was later determined as *Eragrostis curvula* (Schrad.) Nees. were observed in Howell County in southern Missouri. The appearance of this grass was striking, it being rather tall and erect, averaging about a meter in height, and having elongate blades which tapered to a very fine tip. No spikelets were present at this time. The following year and during the past season the species was observed in flower. The spikelets averaged about nine florets. The panicle branches were somewhat stiff and upright. This perennial species, originally observed along U.S. Highway 60 and adjacent open woods,

T27N, R7W, section 24, has spread noticeably in two years. It is not a native species, being listed as an introduction in several southern states including Texas and Florida. Considering its multiplication and spontaneity of spread, the species appears in this area to be well established without benefit of cultivation.

Specimens have been deposited in the University of Missouri Herbarium.

Appreciation is expressed to Dr. J. R. Swallen of the United States National Herbarium who observed some of the collected material.—C. L. KUCERA, BOTANY DEPARTMENT, UNIVERSITY OF MISSOURI, COLUMBIA, MISSOURI.

BREWERIA PICKERINGII IN ILLINOIS.—Over 80 years ago Harry Norton Patterson was probably the first collector of *Breweria pickeringii* (Torr.) Gray in the vicinity of Oquawka, Henderson County in western Illinois. Half a dozen sheets of Patterson's specimens are deposited in the Chicago Natural History Museum Herbarium. Dr. Julian Steyermark reports that Patterson identified his material as *Stylisma pickeringii* and as *Bonamia pickeringii*. Some of the Patterson specimens are also deposited in the University of Illinois Herbarium as well as a collection by Dr. Virginius Chase in 1934.

Within the state sandy prairie and blow-sand areas adjacent to the Illinois and Mississippi Rivers seem to be the preferred habitat of this species. The sprawling plants are abundant where they do occur, but the habitats are widely scattered. It has also been attributed to eastern Iowa.

On 21 June 1954 the writer, accompanied by Mr. R. T. Rexroat of Virginia, Illinois, visited a locality in southwestern Mason County. This locality is about 70 air-line miles southeast of Patterson's Oquawka area. On a gentle, sandy slope *Breweria pickeringii* was plentiful. Subsequently, on 8 July, Mr. Rexroat continued a search and located specimens of *B. pickeringii* in adjoining Cass County. The specimens collected should be referred to var. *pattersoni* Fern. & Schub. Associated with *B. pickeringii* in the Mason County location were *Opuntia rafinesquii* Engelm. and *Hymenopappus scabiosaeus* L'Hér., the latter itself an uncommon plant in Illinois. Specimens of the

Mason County collection (No. 11113) have been deposited in the herbaria of Illinois State Museum, Springfield, University of Illinois, Urbana, and Chicago Natural History Museum.

ILLINOIS RECORDS: Oquawka, Henderson County, 10 August 1873, *H. N. Patterson*. Henderson County, 12 August 1934, *V. H. Chase* 5109. Mason County, 21 June 1954, *G. S. Winterringer* 11113. Cass County, 8 July 1954, *R. T. Rexroat* 950, 951.—GLEN S. WINTERRINGER, ILLINOIS STATE MUSEUM, SPRINGFIELD, ILLINOIS.

THE DATE OF PURSH'S FLORA AMERICAE SEPTENTRIONALIS.—Barnhart's conclusion¹ of 1904 that Pursh's *Flora* was published in January 1814, has been found acceptable by recent investigators. However a consultation of the Minutes of the Linnaean Society of London² reveals that Pursh was present at the meeting of December 21, 1813, as a guest of Anderson, and that

Flora Americae septentrionalis or a Systematic arrangement and description of the Plants of North America by Frederick Pursh in 2 Vols 8^{oo} London 1814 was presented by the Author.

Lambert had written to Sir James Edward Smith³ after the preceding meeting of the Society on December 7, 1813, "We had a good meeting of the society last night . . . *Flora Americana* will finish printing this week . . ." and on February 3, 1814, he wrote to Smith that he supposes he has Pursh's *Flora Americana* "by this time as it has been published sometime."

It is interesting to note that Asa Gray⁴ gave the close of 1813 as the time of publication.—JEANETTE E. GRAUSTEIN.

RANGE EXTENSION FOR *ISOTRIA MEDEOLOIDES*.—During a walk in the moist woods in the vicinity of Sebago Lake I came upon a colony of plants then unknown to me. A specimen was taken to the Annual Meeting of the Josselyn Botanical Society and readily identified as *Isotria medeoloides* (Pursh) Raf. According to Correll, "Native Orchids of North America," the plant

¹ Barnhart, John H., "The date of Pursh's Flora." *Torreya* IV (1904) 132–136.

² MS. Minutes of the Linnaean Society of London.

³ MS. Correspondence of Sir James Edward Smith VI, 150, 151.

⁴ Gray, Asa, "Remarks concerning the Flora of North America." *Amer. Jour. Sci.* ser. 3, XXIV (1882) 323–331.

is found locally in New England. According to the Check-list of the Vascular Plants of Maine, Bulletin of the Josselyn Botanical Society of Maine, Number 8, no record of the plant was found for Maine. The specimen is filed in the University of Maine Herbarium.—IVA M. KNIGHT, R. F. D. 1, KENNEBUNK, MAINE.

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ERRATA

Cover of No. 662; for **inseparata** read **insperata**.

Page 43, page heading; for inseparata read insperata.

Page 57, line 21; for *fasciculata* read *fasciculatum*.

Cover of No. 667; for *Duncun* read *Duncan*.

Page 160, line 32; for CENTAUREUM read CENTAURIUM.

Page 180, line 28; for *Phragmitis* read *Phragmites*.

Page 219, line 3; for *hybridizaed* read *hybridized*.

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